



## **Deep Learning Program Opening Workshop August 12-16, 2019**

### **SPEAKER TITLES/ABSTRACTS**

#### **Junier Oliva**

University of North Carolina

“Improving Generative Models”

Unsupervised generative methods have undergone a recent renaissance, spurred on in large part by impressive photo-realistic results in image applications. These generative methods seek to yield models that understand data by learning how to generate samples through implicit and explicit likelihood optimization. However, despite the surge in interest, these models are limited in several key aspects. First, although methods with an explicit likelihood are, in principle, able to perform additional tasks like anomaly detection and imputation, biases in the learned likelihood render these models useless for such important tasks. For example, recent work has shown that modern methods lead to high out-of-distribution likelihoods for data that is unlike seen training instances. Secondly, most current generative methods are limited to fixed-length vector or sequential data, leaving a substantial gap for the analysis of exchangeable data like sets and graphs. I.e., modern generative models excel at modeling dependencies among features in a point, but are lacking in modeling dependencies among points in a collection. In this talk I discuss these shortcomings and suggest some possible avenues for improvement.